

**REMARKS****Status of Claims**

Claims 18-45 are pending, of which claims 18, 21, 28 and 42 are independent. Claims 18, 21 and 28 have been amended to correct informalities in the claim language and to more clearly define the claimed subject matter. Claims 33-45 have been newly added. No new matter has been entered.

**Claim Rejection -35 U.S.C. § 103**

Claims 18-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuo (JP Publication 09-283373) in view of Johannsen et al. (USP 6,859,542). Claims 21-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuo in view of Johannsen in view of Yasuno et al. (USP 6,731,766) in further view of Mullenborn et al (USP 6,622,368). Applicants respectfully traverse these rejections for at least the following reasons.

Applicants respectfully submit that amended claim 18 now recites, among other features, that “a first insulating film [is] formed to cover upper and side surfaces of the silicon oxide film” and “at least one of the first insulating film or the second insulating film is formed to be in contact with at least one of the upper, side, and lower surfaces of the silicon oxide film.” Specifically, the upper, side and lower surfaces of the charged silicon oxide film are covered with an insulating film, e.g., a silicon nitride film having a high moisture resistance, to prevent the surfaces of the silicon oxide film, which serves as an electret, from being exposed to an ambient atmosphere. This structure can suppress reduction in the amount of charge in the silicon oxide film (see paragraphs [0011] and [0040] of the present disclosure).

Turning to the cited references, the Examiner asserts that Mitsuo discloses a charged silicon oxide film, but concedes that Mitsuo fails to show a first insulating film formed to cover upper and side surfaces of the silicon oxide film, and a second insulating film formed to cover a lower surface of the silicon oxide film. The Examiner relies on Johannsen asserting that Johannsen teaches covering an entire diaphragm with a hydrophobic layer. Thus, the Examiner asserts that claim 18 is obvious from the combination of Mitsuo and Johannsen. Applicants respectfully disagree.

Applicants submit that although Johannsen appears to disclose covering an entire diaphragm having a multilayer structure composed of polysilicon and a silicon nitride film with a hydrophobic layer, Johannsen fails to show covering *a charged silicon oxide film* with an insulating film. The diaphragm of Johannsen is made from poly-silicon/silicon-rich silicon nitride sandwich (see, col. 7, lines 13-14 of Johannsen). Thus, it is clear that Johannsen fails to teach forming a charged silicon oxide film in the diaphragm.

The technique of covering the upper and side surfaces of a silicon oxide film with a first insulating film and the lower surface of the silicon oxide film with a second insulating film has significance only when the target to be covered is a charged silicon oxide film. Otherwise, it is impossible to obtain the advantage of the present disclosure, i.e., preventing the surfaces of a silicon oxide film, which serves as an electret, from being exposed to an ambient atmosphere so as to suppress reduction in the amount of charge in the silicon oxide film. That is, Johannsen fails to recognize the problem addressed by the present disclosure.

Furthermore, Johannsen aims to form a hydrophobic layer on an air gap side of a diaphragm to prevent the stiction (i.e., static friction) between the diaphragm and a fixed film by moisture. That is, Johannsen does not aim to cover the entire diaphragm with the hydrophobic

layer. It should be noted that in Johannsen, the entire diaphragm is not covered with the hydrophobic layer. After forming a condenser microphone, the material of the hydrophobic layer is poured into the opening of a fixed film of the condenser microphone to form a hydrophobic layer on the surface of the diaphragm (see, FIG. 3 of Johannsen). However, when the hydrophobic layer is formed on the diaphragm of a completed condenser microphone, there is always a part of the diaphragm which is not in contact with the material of the hydrophobic layer (e.g., the connection between the diaphragm and the substrate). Therefore, in Johannsen, the entire diaphragm cannot be covered with the hydrophobic layer. From this fact, it is also found that Johannsen fails to recognize the problem addressed by the present disclosure.

As such, it is clear that one of ordinary skill in the art would not combine Mitsuo and Johannsen because there is no motivation to combine these references.

Moreover, in Johannsen, the hydrophobic layer is formed on the surface of the diaphragm having a multilayer structure composed of polysilicon and a silicon nitride film. Thus, no insulating film is formed to be in contact with at least one of the upper, side, and lower surfaces of a charged silicon oxide film. That is, Johannsen fails to show “at least one of the first insulating film or the second insulating film is formed to be in contact with at least one of the upper, side, and lower surfaces of the silicon oxide film” as recited by amended claim 18.

Based on the foregoing, it is clear that the combination of Mitsuo and Johannsen does not render claim 18 and any claim dependent thereon obvious. Moreover, neither Yasuno nor Mullenborn cure these deficiencies of Mitsuo and Johannsen. Thus, claim 18 and all claims dependent thereon are patentable over the cited references.

Applicants also submit that since claims 21 and 28 have been amended to recite substantially similar limitations to claim 18, claims 21 and 28 and all claims dependent thereon are patentable for at least the same reasons as claim 18.

Accordingly, it is respectfully requested that the Examiner withdraw the rejections of claims 18-32 under 35 U.S.C. § 103(a).

### **New Claims**

Since new claims 33-41 depend upon either one of claims 18, 21 and 28, these new claims are patentable over the cited references for at least the same reasons as claims 18, 21 and 18.

New claim 42 recites “a first silicon nitride film formed to cover upper and side surfaces of the charged silicon oxide film and a second silicon nitride film formed to cover a lower surface of the charged silicon oxide film.” In Johannsen, the silicon nitride film of the diaphragm is formed only on the upper or lower surface of the polysilicon (see, FIGS. 1-3 of Johannsen), and is not formed on the side surface of the polysilicon. Thus, it is clear that, at a minimum, Johannsen does not teach covering the upper, side and lower surfaces of the polysilicon with a silicon nitride film. It is also clear that none of other cited references cure this deficiency of Johannsen. As such, new claim 42 and all dependent claims thereon are patentable over the cited references.


**Conclusion**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP

*for*  *Limited  
Recognition No.  
20123*  
Michael E. Fogarty  
Registration No. 36,139

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 MEF:TS:MaM  
Facsimile: 202.756.8087  
**Date: June 2, 2009**

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